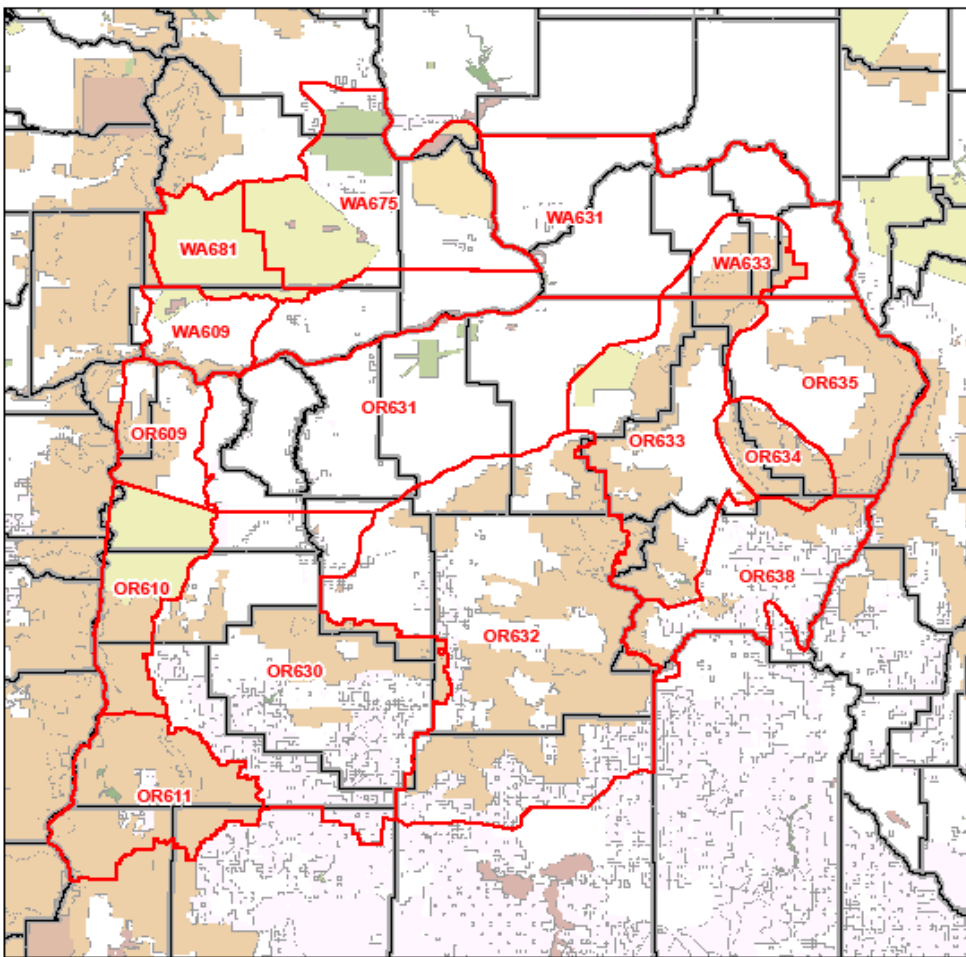


FIRE WEATHER ANNUAL SUMMARY 2010

Covering

***Central and Northeast Oregon, South Central and
Southeast Washington***

Prepared by Jon Bonk
Fire Weather Program Manager
National Weather Service, Pendleton, Oregon



Pendleton Fire Weather Zones

Legend

- Fire Zones
- Counties
- Federal Lands**
 - BIA
 - BLM
 - BOR
 - DOD
 - FS
 - FWS
 - NPS
 - OTHER
- States

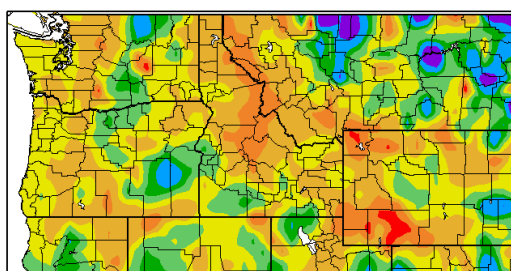


2010 Weather Review for Northwest Oregon and Southeast Washington

Late Fall/Winter 2009-2010 (November – February)

Late fall and winter precipitation amounts were well below normal across most of the higher elevation areas after an active and wet early fall. Exceptions occurred along the Northern Oregon Cascade east slopes and the lower elevation areas of the Southern Washington Cascade east slopes. November 2009 saw near normal temperatures and precipitation amounts. December's temperatures were below normal while the entire area received below normal precipitation amounts despite a few significant storms. January and February only saw local precipitation amounts above normal along with temperatures several degrees above normal. This left the winter snow pack largely well below normal across Northeast Oregon and Southeast Washington and rather typical from past El Niño winters. The following images illustrate conditions for a three month period ending February 2010.

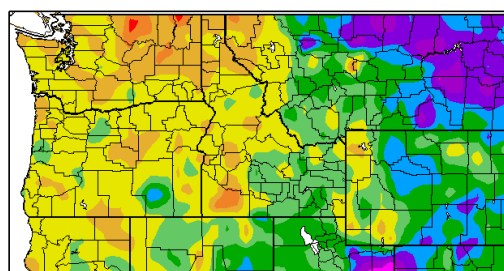
Percent of Normal Precipitation (%)
12/1/2009 – 2/28/2010



Generated 11/23/2010 at HPRCC using provisional data.

Regional Climate Centers

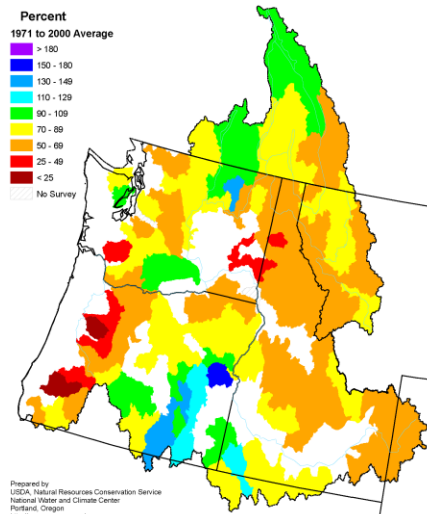
Departure from Normal Temperature (F)
12/1/2009 – 2/28/2010



Generated 11/23/2010 at HPRCC using provisional data.

Regional Climate Centers

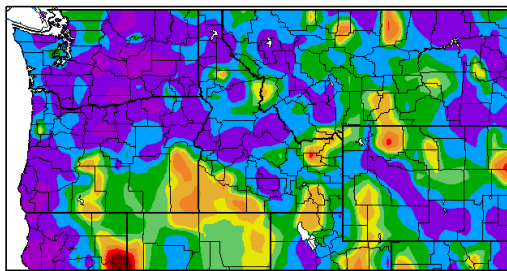
Columbia River Mountain Snowpack as of March 1, 2010



2010 Spring Prescribed Burn Season (March – June)

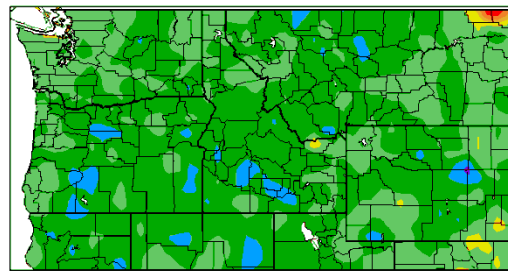
For the second year in a row, the spring prescribed burn season was wet and cool under a very active weather pattern. This year, however, snow levels remained high enough that no significant additions to the snow pack occurred. Most precipitation fell as rain and occurred with enough frequency to limit prescribed burning. March was the only month with below normal precipitation amounts and was significantly so. April, May, and June were in stark contrast and ran above normal with June well above normal. Temperatures through the 4 month period (except March) were below normal as little warming and drying occurred given the pattern. Prescribed burning forecast requests were down significantly from typical years but continued well into June. Minimal wildfire forecast requests were received.

Percent of Normal Precipitation (%)
4/1/2010 – 6/30/2010



Generated 7/11/2010 at HPRCC using provisional data.

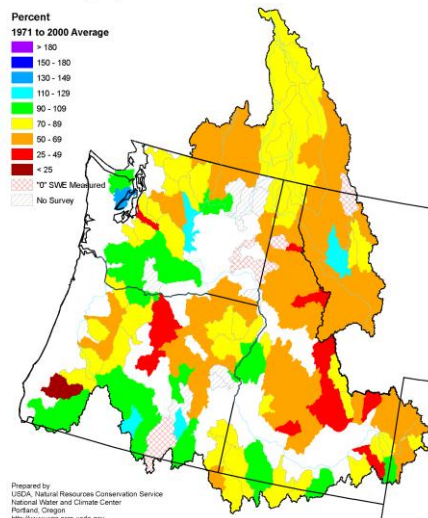
Departure from Normal Temperature (F)
4/1/2010 – 6/30/2010



Generated 7/11/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

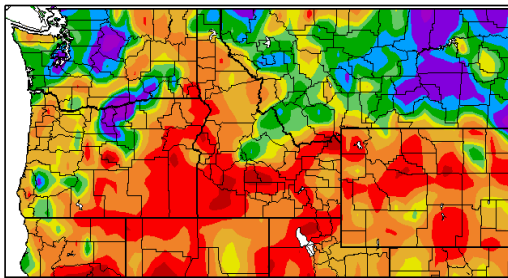
Columbia River Mountain Snowpack as of May 1, 2010



Peak Fire Season 2010 (July – September)

The 2010 peak fire season got off to a slow start due to the previously mentioned conditions. It was very late June and early July before users considered the low elevation grass and rangelands cured enough to support significant wildfire. It took until the end of July before most mountain zone fuels were cured enough to support significant fires. The high mountain zones (OR634 – Eagle Cap Wilderness and WA681 – Yakama Alpine District) likely never cured during the season. Natural ignitions were limited for most of the season as the typical four corners high never really established over the desert southwest. This resulted in most thunderstorms coming from oceanic origins and typically producing significant rainfall as opposed to more common drier thunderstorms with continental origins. Otherwise, the lack of a four corners high allowed for a semi-persistent trough to become established over the Pacific Northwest. Precipitation amounts were below normal to well below normal for July and August. September amounts were above normal except for Central and East Central Oregon. Temperatures generally ran near to below normal until September with Central and East Central Oregon running a few degrees above normal. All told, the peak fire season appeared to be shortened by a month on each end with the region experiencing below normal precipitation and near to below normal temperatures. September did bring unusual significant rains to the Lower Columbia Basin to bring the overall amounts above average for the 3 month period. These rains also dropped fire danger ratings enough allowing many agencies to begin prescribed burning work in earnest by late September.

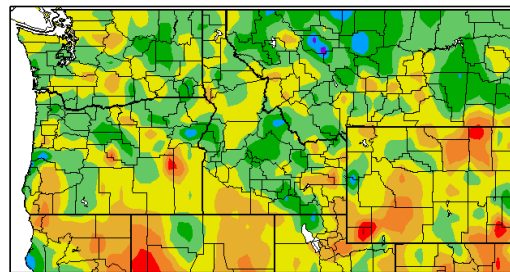
Percent of Normal Precipitation (%)
7/1/2010 – 9/30/2010



Generated 10/11/2010 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature (F)
7/1/2010 – 9/30/2010



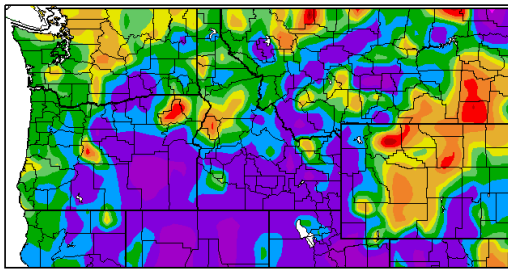
Generated 10/11/2010 at HPRCC using provisional data.

Regional Climate Centers

Fall Prescribed Fire Season 2010 (October – December)

A persistent four corners high finally developed and brought a desirable burn window for much of the area during the month of October. Weak weather systems also allowed quality ventilation thus further enhancing burn opportunities for many areas. The cool and wet trend, typical of La Niña, returned late October through the end of the year with frequent periods of moderate precipitation and lowering snow levels to effectively end prescribed burn work for the year. A couple of early October rain events held precipitation amounts above normal for the month despite being offset by a drier latter two-thirds of the month. Another very wet system occurred in early November along with near normal temperatures for the remainder of the month with below normal precipitation amounts and near normal temperatures for the month. December was very active with frequent storms producing well above normal precipitation amounts along with nearly normal temperatures.

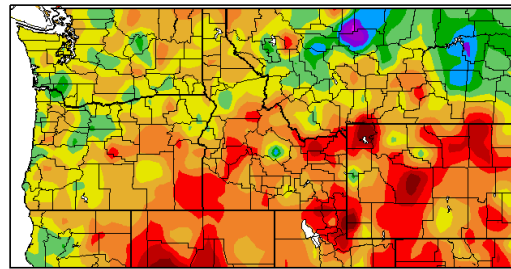
Percent of Normal Precipitation (%)
10/1/2010 – 12/31/2010



Generated 1/2/2011 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature (F)
10/1/2010 – 12/31/2010

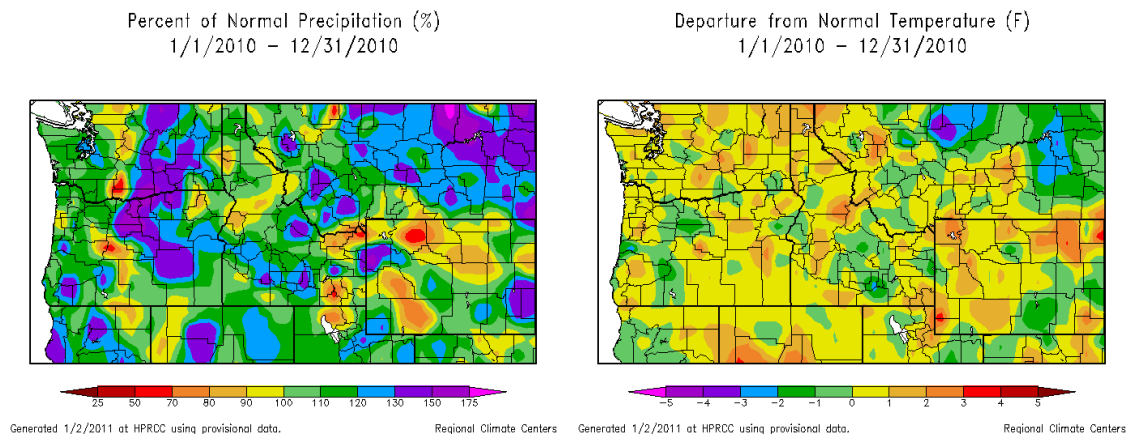


Generated 1/2/2011 at HPRCC using provisional data.

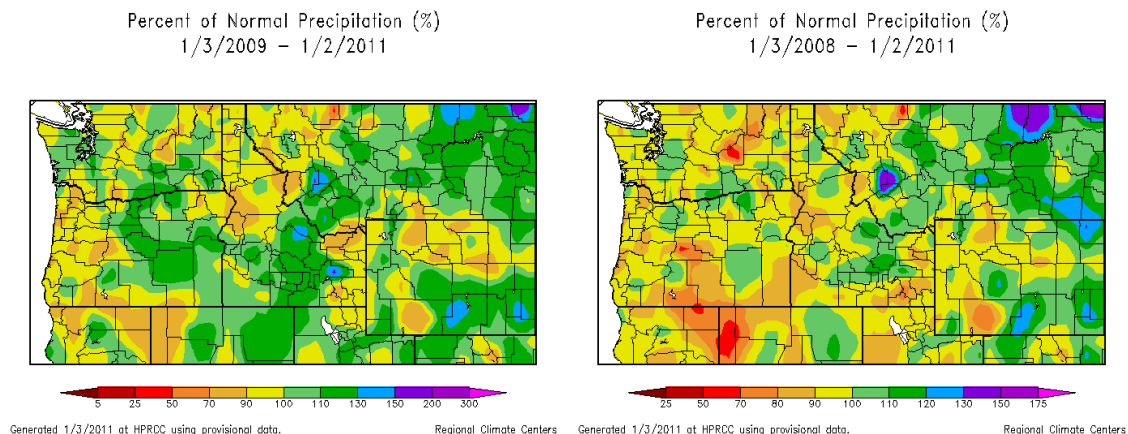
Regional Climate Centers

Overall 2010 Conditions

The past year saw conditions somewhat atypical for the fire district. A moist spring weather pattern followed by a notably wet June proved again that the severity of fire season across the region is determined more by the spring weather rather than the precedent winter weather. During peak fire season, thunderstorms had less of an impact on ignitions than in a typical year. The dominant onshore flow resulted in thunderstorms producing significant rain likely limiting holdover starts. Normally, mid-summer thunderstorms tend to be drier resulting in a greater likelihood of holdover starts. All told, the peak fire season was again compressed (similar to 2009) with a late start due to above normal spring rain amounts and a couple of well timed early fall events. The four corners high never really materialized either during typical peak fire season and only had a prolonged presence during late September and a large portion of October. This later development allowed agencies an opportunity to make up planned burn work lost during the spring. Data shows overall precipitation for 2010 was above normal across most areas except for the immediate Cascade East Slopes of Southern Washington and Central Oregon. Temperatures for the year hovered around normal.



The latest two and three calendar year precipitation averages show the mountain areas continue to run below normal, however significant gains toward normal have been made the last two years.



Red Flag Warning Verification and Events

Pendleton Red Flag Warnings 2010

Date	Zones	Reason	Verification	Lead Time
July 9	OR609, WA609	Wind/Low RH	Yes – All zones	7.0 Hrs
July 12	OR609, WA609, OR631, WA631, WA675	Wind/Low RH	Yes – All zones	20.0 Hrs
July 16	OR631, WA631, WA675	Wind/Low RH	Yes – All zones	8.5 Hrs
July 25-28	OR610, OR611, OR630, OR631, WA631, OR632, OR633, WA633, OR638	Lightning	No – WA631, OR631 Yes – All others	22.9 Hrs
July 28 Evening	OR610	Lightning	Missed event (Previous Warning Expired)	0.0 Hrs
July 29-30 am	WA631, OR633, WA675	Lightning	Missed event	0.0 Hrs
July 30-31 am	OR610, OR611, OR630, OR631, WA631, OR632, OR633, WA633, OR638	Lightning	No – OR630, OR632, WA633, OR633, OR638 Yes – OR610, OR611, OR631, WA631	12.6 Hrs
July 31	WA631, WA675	Lightning	Yes – Both zones	0.0 Hrs (ongoing event, thus zero lead)
August 5-6	OR632, OR633, WA633, OR634, OR635, OR638	Lightning	No – WA633 Yes – All others	12.5 Hrs
August 9-10	OR634, OR635, OR638	Lightning	Yes – All zones	30.6 Hrs
August 9-10	OR632	Lightning	Missed event	0.0 Hrs
August 11	OR632, OR638	Lightning	Yes - All	0.4 Hrs (ongoing event with little lead)
August 17	OR630, OR632, OR638	Haines 6 / Low RH	Yes – All zones	19.8 Hrs

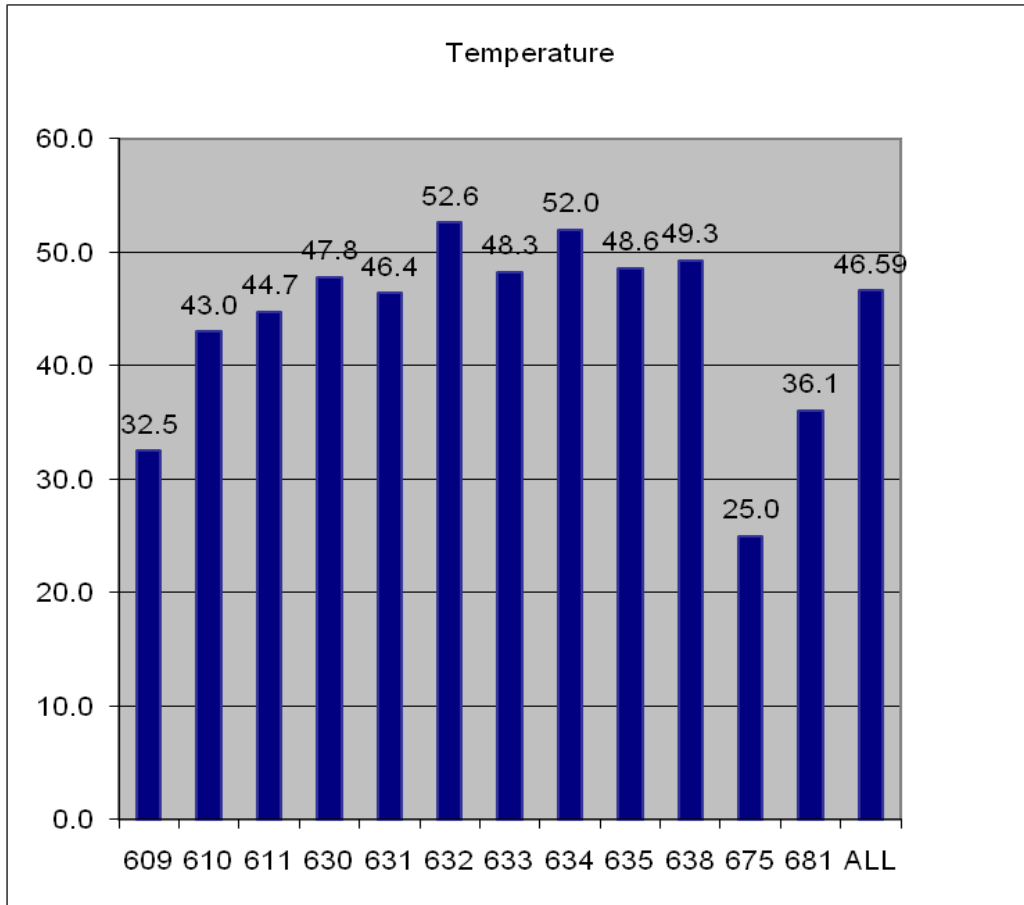
August 17-18	OR609, OR610, OR611, OR630, OR631, OR632, OR633, WA633, OR634, OR635, OR638	Lightning	No – WA633, OR634, OR635, OR638 Yes – All Others	27.5 Hrs
August 19	OR631, WA631, WA675	Wind/Low RH	No – WA631 Yes – OR631, WA675	10.7 Hrs
August 25	OR610, OR611, OR630, OR632	Haines 6 / Low RH	Yes – All zones	5.2 Hrs
August 26	OR631, WA631, WA675	Wind/Low RH	Yes – All zones	24.5 Hrs
August 26	OR632	Wind/Low RH	Missed event	0.0 Hrs
				Average: 15.0 Hrs

	<u>Total</u>	<u>Lightning</u>	<u>Synoptic (Low RH along with Wind or Haines 6)</u>
Warnings Issued:	65	42	23
Verified Warnings:	52	30	22
Unverified Warnings:	13	12	1
Missed Warnings:	6	5	1
 False Alarm Rate:	 0.20	 0.29	 0.04
Probability of Detection:	0.90	0.86	0.96
Critical Success Index:	0.73	0.64	0.92

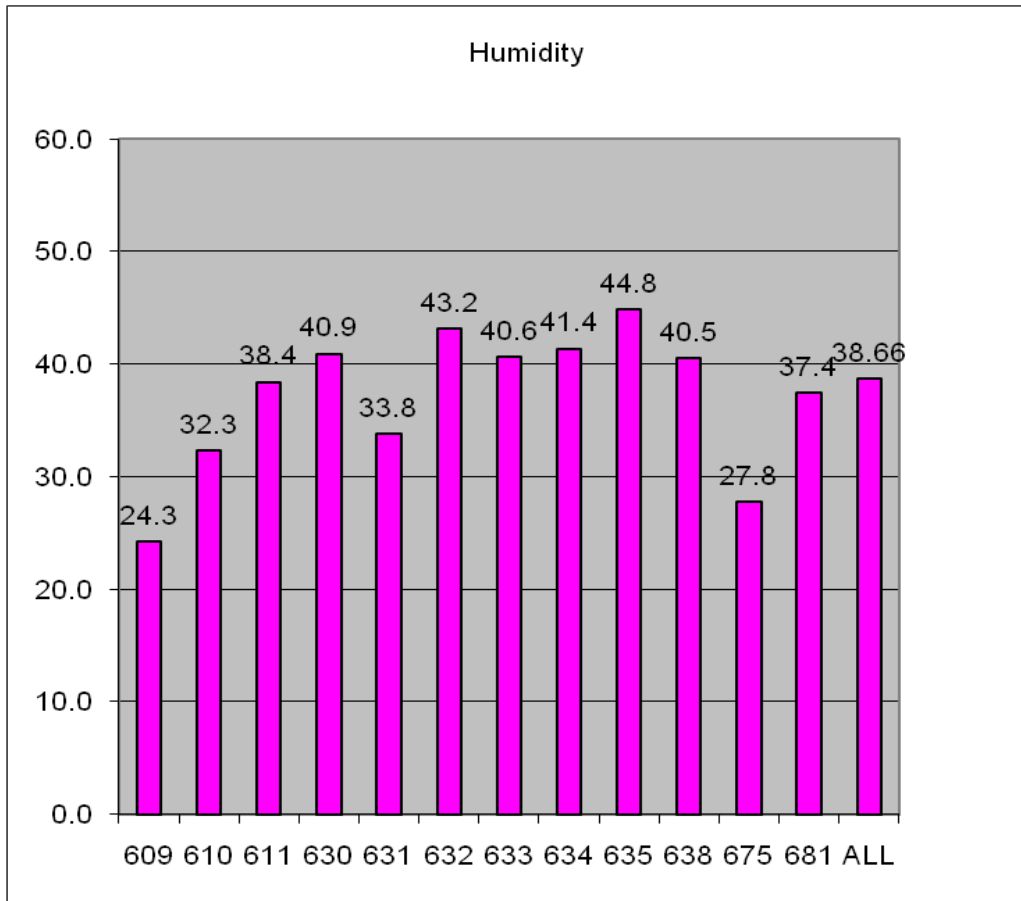
Note: For highest accuracy, False Alarm Rate (FAR) should approach 0.00 with Critical Success Index (CSI) and Probability of Detection (POD) nearing 1.00

2010 NFDRS Verification

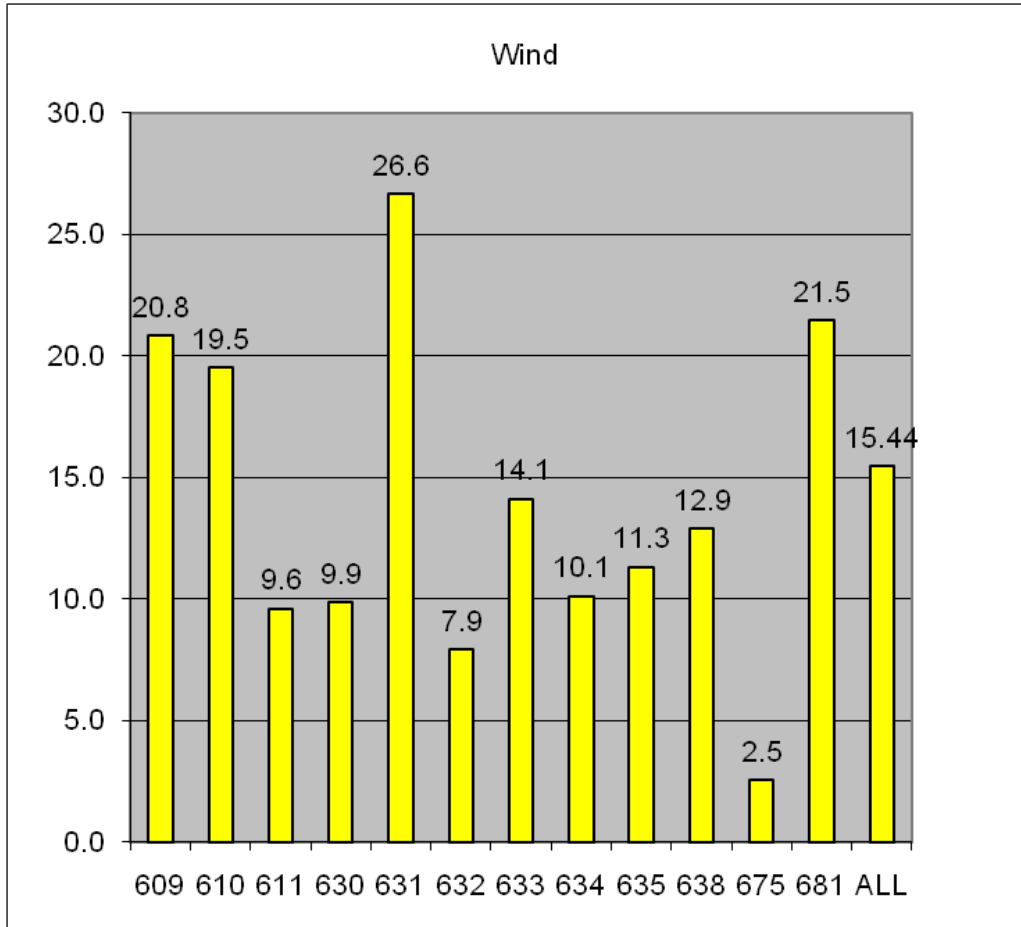
The following charts show forecast percentage improvement over persistence for temperatures, relative humidity and wind speed covering each zone followed by the combined average in the final column. The June 1 through September 30 time frame is covered. Very few and inconsistent observations were received for zone 675 in the 2010 fire season.



Temperature verification (above) for the entire Pendleton forecast fire area improved to 46.6% over persistence compared to 43.6% last year. The office goal is to maintain an improvement of 35% or greater which was accomplished in nearly every zone this year.

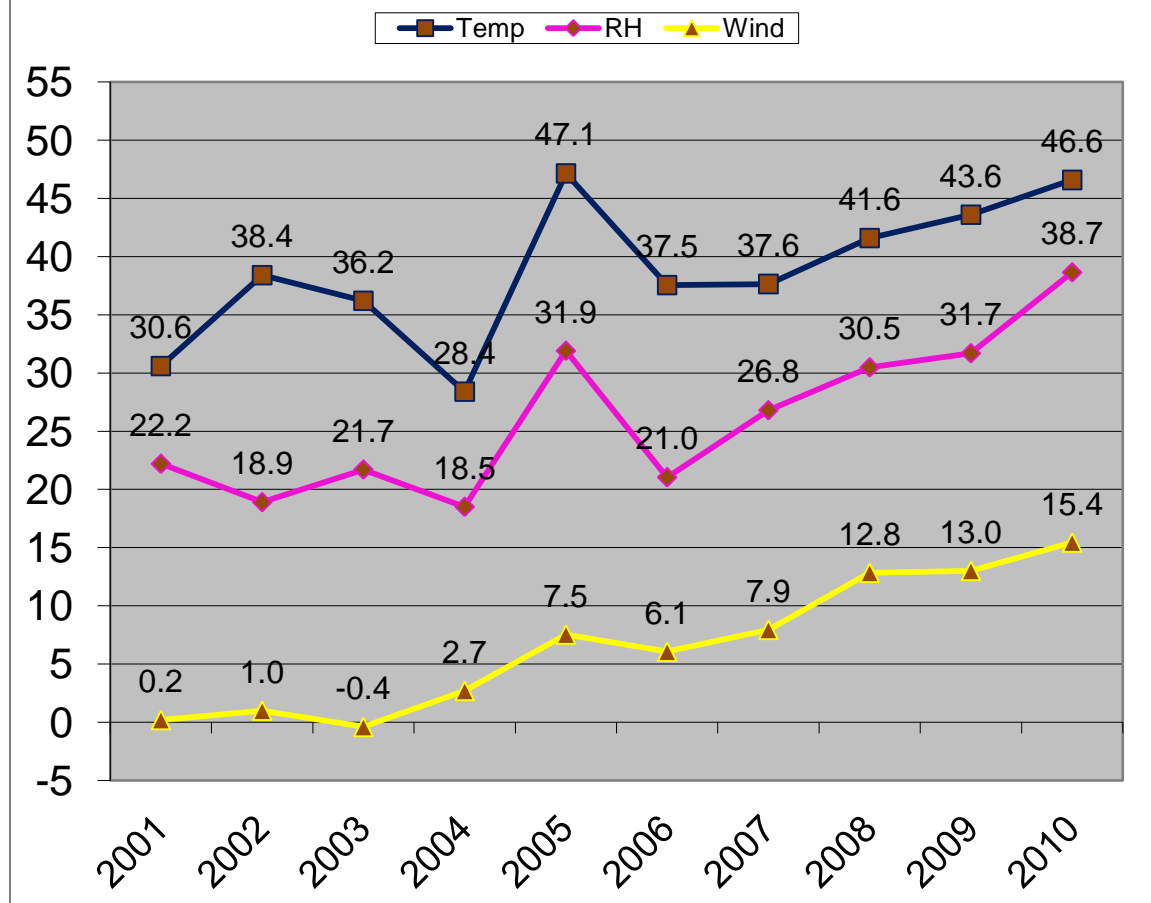


Humidity verification (above) rose to 38.7% this year compared to the previous year's 31.7%. The office goal is to maintain an improvement of 25% or greater which was accomplished in all but one zone this year.



Overall wind verification (above) rose to 15.4% compared to last year's 13.0%. Our office goal is 10% improvement over persistence. Most notable is this year's overall performance with the mountain zones largely showing the 10% goal being met.

NFDRS Improvement Over Persistence All Zones: 2001 - 2010



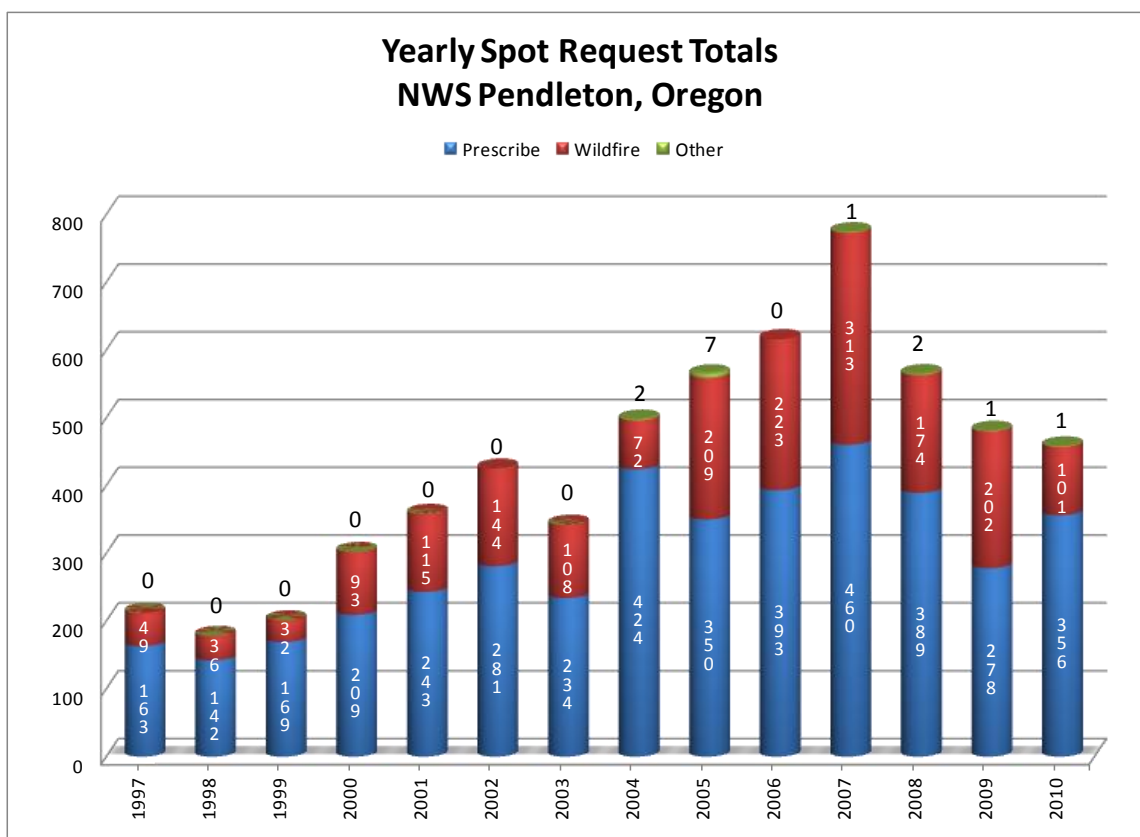
10 year trend graph (above) showing forecast improvement over persistence for NFDRS forecasts. Overall, yearly NFDRS verification data and trends for the Pendleton office are showing a gradual improvement over persistence. Performance goals are improvements greater than 35% for temperature, 25% for relative humidity, and 10% for wind speed. Note: Technological improvements allowed NFDRS zone average trend forecasts to be switched to individual station trend forecasts in 2008.

2010 Forecasts Issued by WFO PDT Staff

Month	Routine Fire Weather Planning ¹	Spot Forecast		Red Flag Events		On Site AMRS	NFDRS Fcsts	Air Transport & Stability ¹
		Prescribed	Wildfire & Hazmat	FWX Watch	Red Flag Warning			
Jan	0	0	0	0	0	0	0	31
Feb	0	4	0	0	0	0	0	28
Mar	6	4	0	0	0	0	0	31
Apr	44	35	1	0	0	0	20	30
May	50	50	1	0	0	0	24	31
Jun	62	12	1	0	0	0	30	31
Jul	64	4	23	22	30	4	31	31
Aug	64	2	59	21	35	18	31	31
Sep	61	100	17	0	0	0	30	30
Oct	42	141	0	0	0	0	29	32
Nov	10	4	0	0	0	0	5	30
Dec	0	0	0	0	0	0	0	31
Total	403	356	102	43	65	22	195	367

¹ Includes non-routine forecast updates

2010 Spot Forecast Totals



The chart above shows the 14 year trend of SPOT forecasts issued by the Pendleton office. Total number of spot forecasts (458) issued by the Pendleton weather office this year continues the declining trend since a maximum of 774 in 2007. There were 356 prescribed burn spot forecasts (an increase of 78 over the previous year) and 101 wildfire spot requests (a decrease of 101). There was 1 hazmat spot forecast this year. As noted earlier, a cool and moist spring had a significant impact on the early 2010 prescribed burning season. A greater frequency of wet thunderstorms resulted in fewer fire starts during peak fire season.

IMET dispatches

A total of 3 Incident Meteorologist (IMET) dispatches from WFO Pendleton occurred this year for a total of 18 days. Assignments are listed below.

<u>Dates</u>	<u>IMET</u>	<u>Incident</u>	<u>Location</u>
7/29 – 8/2	Bonk	McDonald Fire	Termo, CA
8/4 – 8/10	Bonk	Rooster Rock Fire	Sisters, OR
8/27 – 9/1	Bonk	Highway 8 Fire	Lyle, WA

Training and Outreach

Training and outreach continues to be an important part of the fire weather program at WFO Pendleton. The following table lists training and activities for 2010.

<u>Date(s)</u>	<u>Forecaster</u>	<u>Activity</u>	<u>Location</u>
Winter 2009-2010	All staff	ICS-100, Introduction to the Incident Command System	Internet Course
Winter 2009-2010	All staff	ICS-700, Introduction to the National Incident Management System	Internet Course
Winter 2009-2010	Bonk	Intro to Computer-Aided Management of Emergency Operations (Performance Level)	Distance Learning
1/4 - 1/5	Bonk/Solomon	Teaching S-290	Burbank, CA
1/11 – 1/12	Bonk	Teaching S-290	Redmond, OR
3/15	Bonk	Umatilla County Smoke Management Meeting	Pendleton, OR
3/22 – 3/26	Bonk/Solomon	Annual IMET Conference	Boise, ID
4/12 – 4/13	Bonk	Teaching S-290	Pendleton, OR
4/17 – 4/18	Bonk	Teaching S-290	Centerville, WA
4/28 – 4/29	Bonk	Teaching S-290	Prineville, OR
5/3	Bonk	Canned Spot Forecasts for Columbia Generating Station Exercise	Benton County, WA
5/4	Bonk	Mt. Hood NF Meeting	Vancouver, WA
5/18	Bonk	Umatilla NF Meeting	Pendleton, OR
5/19	Bonk	Teaching S-290 Refresher	La Grande, OR
5/19	Bonk	Wallowa-Whitman NF Meeting	Baker City, OR
5/22	All Staff	WFO PDT Open House	Pendleton, OR
6/1	Bonk	Central Oregon Fire Management Service Meeting	Prineville, OR
6/2	Bonk	C. O. Dispatch Meeting	Prineville, OR
6/7 – 6/8	Bonk	Teaching S-290	Warm Springs, OR
6/14 – 6/15	Bonk	Teaching S-290	Pendleton, OR
7/13 – 7/14	Bonk	Teaching S-290	La Grande, OR
11/4	Bonk	ICS-200, ICS for Single Resources and Initial Action Incident	Internet Course
11/19	Bonk	ICS-800, National Response Framework, an Introduction	Internet Course